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ABSTRACT

This manual is part of a series dealing with skills and information needed by students in dental assisting. The individualized student materials are suitable for classroom, laboratory, or cooperative training programs. This student manual contains four units covering the following topics: local anesthesia; dental office emergencies; oral hygiene; and instrumentation. For each unit, student learning objectives, new terms and definitions, and illustrated information sheets are provided. A bibliography completes the booklet. (KC)

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Dental Chairside Technique

Student's Manual

By

Maura Apfel, C.D.A.
and
Trudy Karlene Weaver, C.D.A.

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Foreword

This publication, *Dental Chairside Technique*, is part of a new series that deals with skills and information needed by students learning to become dental assistants. The design of the material makes it useful in a variety of training environments: classroom, laboratory, or cooperative training programs.

Although the material is individualized, it should be used under the supervision of a coordinator or instructor. For that reason, two basic publications are offered, a student manual and an instructor's guide. The student manual is written for the person in training. It includes objectives and information.

The instructor's guide provides objectives, a sentence outline of the information, learning activities, unit tests, answers to tests and learning activities, and a competencies progress chart. Also included is a sample coordinating work sheet to match related instruction with job experiences.

Although the manual and the guide are copyrighted, feel free to reproduce copies of the activities and tests. If you prefer, these same sheets can be ordered separately for individual students from the Center for Occupational Curriculum Development, P. O. Box 7218, The University of Texas at Austin, Austin, Texas 78712.

Jack E. Robertson, Director
Center for Occupational Curriculum Development

Preface

The dental assisting student needs current and relevant information. The material must relate directly to the dental assisting profession. Equipment, personnel, facilities, and patient demands vary greatly from one work setting to another. Because of this, we have tried to provide study materials and learning activities that are general enough for all students in dental assisting to use to increase their understanding and performance on the job.

The Center for Occupational Curriculum Development gratefully acknowledges Colwell Systems, Inc., in Champaign, Illinois, for the use of illustrations of dental instruments taken from their publication entitled *Dental Hand Instruments Identification*, by Ann B. Ehrlich.

Objectives: *After completing this unit, you will be able to–*

1. *select the correct materials for administering an oral injection: (a) block, (b) infiltration;*
2. *list the three types of topical anesthetics;*
3. *demonstrate the proper loading of an aspirating syringe;*
4. *demonstrate the proper unloading of an aspirating syringe;*
5. *demonstrate one method of disposing of an anesthetic needle; and*
6. *define the terms found at the beginning of this unit.*

Unit
ONE
Local Anesthesia

New Terms and Definitions:

1. *anesthetic*–a drug or substance that produces a loss of feeling or sensation.
   (a) *local*–a drug or substance which, when injected into the tissue, causes temporary loss of feeling or sensation in that area.
   (b) *general*–a drug or substance which, when injected or inhaled, produces a state of unconsciousness.
   (c) *topical*–a drug or substance which, when applied to the tissue, produces a loss of feeling or sensation in that tissue area.
2. *anesthesia*–a loss of sensation or feeling.
3. *anesthetized*–a condition that exists after an anesthetic has been given.
4. *aspirate*–to withdraw by suction.
5. *bevel*–a slant.
6. *block*–obstruct; to halt the movement or progress of something.
7. *epinephrine*–a vasoconstrictor.
8. *infiltration*–to pass through or into by filtering or spreading.
9. *pain*–an unpleasant, uncomfortable sensation in response to a stimulus.
10. *pathologic*–a condition caused by disease.
11. *trauma*–a hurt or wound.
12. *vasoconstrictor*–a substance that causes the walls of a blood vessel to draw together or shrink, making it smaller in diameter.

Pain may be defined as an unpleasant, uncomfortable sensation in response to a stimulus. No word is more closely associated with pain by the American public than "dentistry." Patients are either in pain when they arrive at the office or fear they will experience pain while they are there. To alleviate their fears and to help them tolerate more easily their dental experience, the dental profession employs the use of *local anesthetics*.

As a dental assistant, *you will not be responsible for administering a local anesthetic injection*. This is strictly the dentist's responsibility. However, you are responsible for selecting the proper needle and carpule of anesthetic solution and loading the syringe prior to the injection. Therefore, it is important that you, the assistant, be very familiar with your work materials. It will also help you to have some background information on anesthetics.

This unit often uses the words *anesthetic* and *anesthesia*. You should be very familiar with their meanings:

—an *anesthetic* is a drug or substance that produces a loss of feeling or sensation.
—*anesthesia* is a loss of feeling or sensation.

The two forms or types of anesthesia are *general* and *local*.

General Anesthesia

In *general anesthesia*, the brain and spinal cord are no longer able to read or to send out messages, except for a few that are "automatic," such as breathing and heartbeat. While under general anesthesia, the patient will feel no pain since the general anesthetic produces unconsciousness. A popular gas used as a general anesthetic is *nitrous oxide*. In the dental office, nitrous oxide is mixed with oxygen and inhaled by the patients to help them relax. Nitrous oxide can be very dangerous and should only be given by trained personnel.

Local Anesthesia

Local anesthesia is a loss of feeling or sensation in a specific part of the body. This loss of sensation is obtained by using an anesthetic solution that temporarily blocks the messages being sent from the *nerve trunk* or *nerve endings* to the brain. There is a large trunkline of nerves in the mandible. In the maxilla, each tooth has its own nerve and blood supply. Local anesthesia is achieved in the oral cavity by *topical application* or injection of an anesthetic solution.

Local Anesthesia by Topical Application

A *topical anesthetic* is a drug or substance which, when applied to the tissue, produces a loss of feeling or sensation in that tissue area only. A topical anesthetic is placed on the mucous membrane before an injection to relieve the discomfort caused by the needle as it punctures the tissue. Topical anesthetics are available in three forms: *liquid, paste (cream),* and *spray*. The paste is usually preferred for oral tissues. It is applied to the injection site by a cotton-tipped applicator or cotton roll and allowed to remain several minutes before the injection is given.

Local Anesthesia by Injection

Local anesthesia by injection is done by depositing the anesthetic solution into the tissue by *block* and/or *infiltration* (see fig. 1).

Block anesthesia is obtained by injecting the solution adjacent to a nerve trunk supplying the area to be treated. The most common block injection is the *mandibular block*. This injection anesthetizes all the teeth on the side injected, from the posterior region to the midline. The injection will also anesthetize half of the tongue.

Infiltration anesthesia is obtained by injecting the solution beneath the mucosa of the area to be treated. This method anesthetizes the small nerve endings in a specific area. This method is used to anesthetize the teeth and tissue of the maxillary arch.

Local Anesthetic Solutions

The original local anesthetic solution was produced in a laboratory in 1905. It was called *procaine hydrochloride*. The Noval Chemical Company began manufacturing this anesthetic solution under the brand name *Novocain*.

Many people still use the term *novocaine* when referring to local anesthetic solutions. Other solutions used today are nupercaine, pontocaine, metycaine, and lidocaine hydrochloride. Almost all are sold under brand and trade names such as Xylocaine, Carbocaine, Citanest, and others.

Vasoconstrictors

Local anesthetic agents can also contain another solution called a *vasoconstrictor*. A vasoconstrictor causes the walls of a blood vessel to shrink or contract, making the vessel smaller in diameter. This makes the

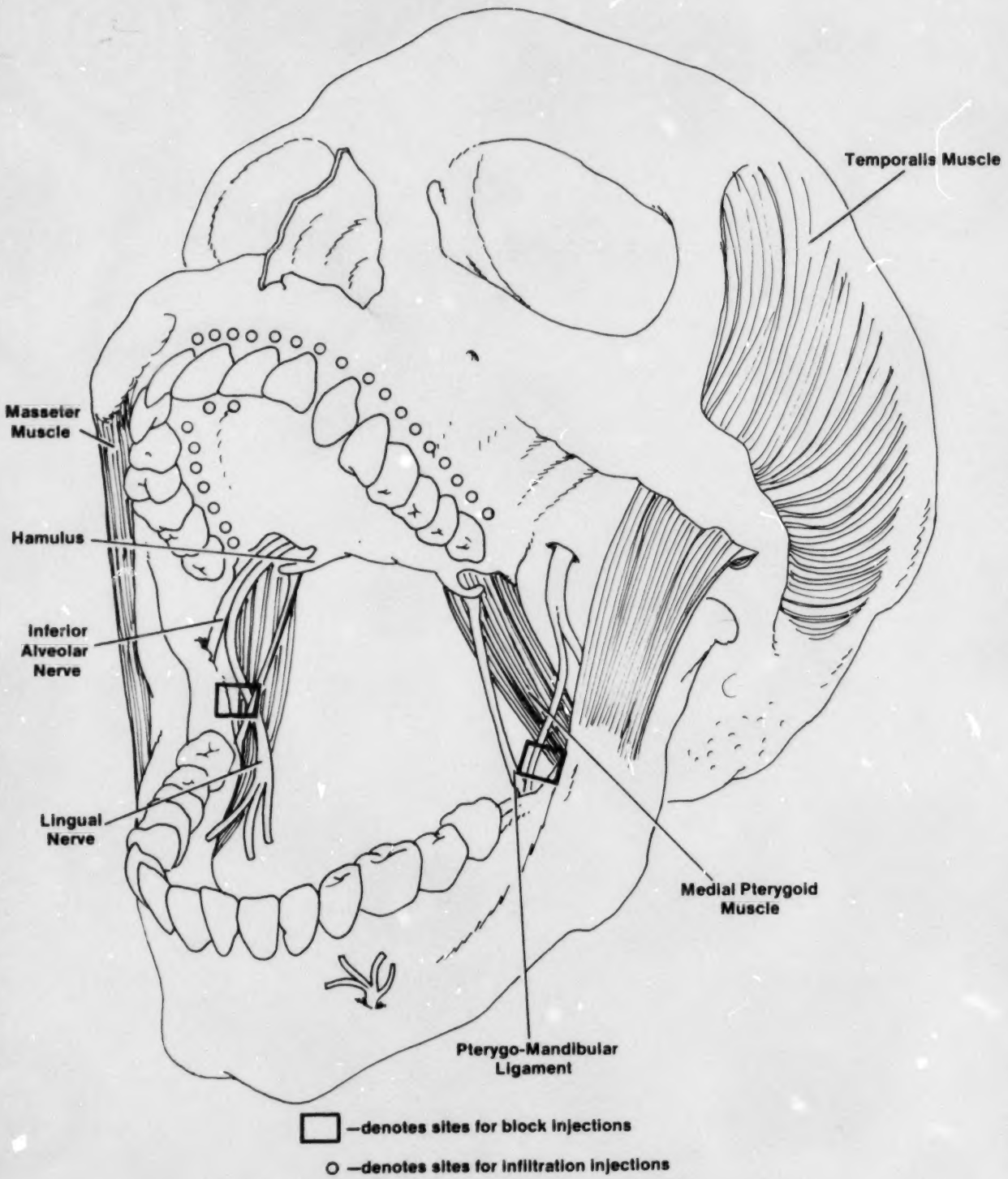


Figure 1. Sites of Anesthetic Injections
Warning: Only the *dentist* administers an injection.

effects of the anesthetic solution last longer, so less can be given. It also helps to slow down bleeding during surgical procedures.

The most common vasoconstrictor is *epinephrine*. It is mixed with anesthetic solutions in varying degrees of strength, and not added at all to some. For all of its benefits, however, a vasconstrictor is a dangerous solution because it acts as a stimulant. Therefore, local anesthetic solutions containing vasoconstrictors should not be used on patients with heart disease, hypertension, asthma, or emphysema.

Anesthetic Carpules

The anesthetic carpule is made of glass (see figs. 2A and 2B). Each carpule contains 1.8 cc of sterile anesthetic solution. On the outside of each carpule is printed the brand name, chemical name, and, if a vasoconstrictor has been added, the anesthetic solution/vasoconstrictor ratio.

The ratio will look something like *1:50,000*. This means that there is one part (or drop) of vasoconstrictor for every 50,000 parts (or drops) of anesthetic solution. If no vasoconstrictor has been added, the word "plain" will sometimes be printed on the carpule.

The anesthetic carpule has three parts: the *cap*, the *diaphragm*, and the *plunger*. Anesthetic carpules are used on only one patient and then thrown away.

Cap—The carpule cap is made of aluminum and covers one end of the carpule. The cap holds the diaphragm in place.

Diaphragm—The diaphragm is a gray piece of rubber through which the needle is inserted.

Plunger—The plunger is at the opposite end of the carpule from the cap. It is made of rubber and attaches to the syringe. When pressure is applied, the plunger forces the solution out of the carpule. Each manufacturer color-codes its plungers to denote the type and strength of the solution in the carpule. Color-coding the plunger makes it easier to identify each carpule. You will need to familiarize yourself with the types of anesthetic solutions used in your office.

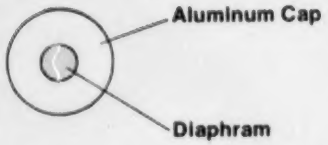


Figure 2A. Anesthetic Carpule—Top View

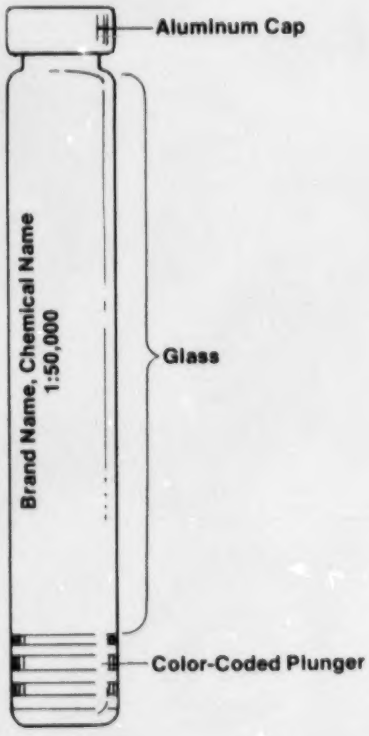


Figure 2B. Anesthetic Carpule

Anesthetic Syringe

The *anesthetic syringe* is made of stainless steel and can be sterilized by autoclaving or cold sterilization solutions. An *autoclave* is a sterilization unit that uses steam under pressure. *Cold sterilization* refers to cold chemical solutions that are used as disinfectants.

Syringes used in dentistry are designed to accept the glass carpules. Local anesthetic

syringes are also aspirating syringes. *Aspiration* is the act of drawing in by suction. An aspirating syringe draws fluids into the carpule. If this fluid is blood, the doctor will reposition the needle and aspirate again. If the fluid is clear, the doctor will inject the solution. Anesthetic solutions should not be injected into blood vessels.

To properly assemble an anesthetic syringe, you need to become acquainted with its parts (see fig. 3A). When assembled, the syringe looks like the illustrations in figures 3B and 3C.

Anesthetic Needles

Anesthetic needles are made of high-grade steel. After the needles are made, they are sterilized by the manufacturer and individually sealed in protective coverings (see fig. 4A). Needles are sharpened at both ends and are beveled for easy entry into the tissue and anesthetic carpule.

Needles are supplied in various diameters designated by numbers—the smaller the number, the greater the diameter. The most commonly used needles are #27 gauge and

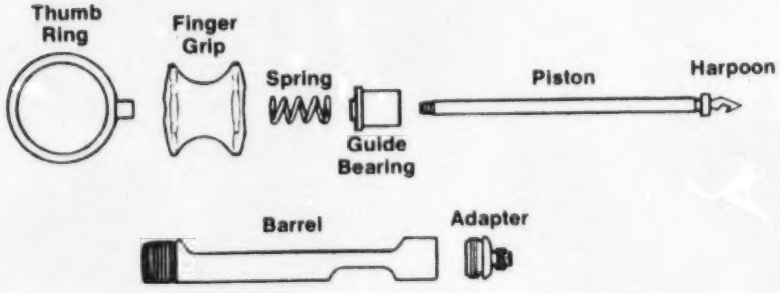


Figure 3A. Parts of an Anesthetic Syringe

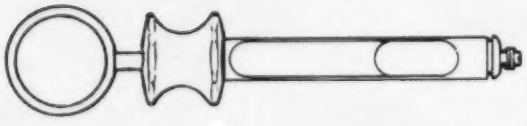


Figure 3B. Assembled Syringe—Piston in Barrel

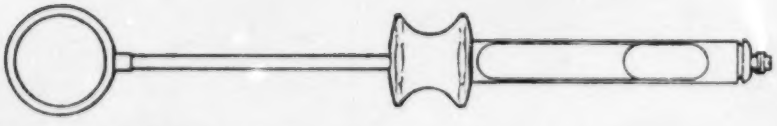


Figure 3C. Assembled Syringe—Piston Extended

#28 gauge. The #28 gauge is smaller in diameter than the #27 gauge.

Anesthetic needles are also supplied in two lengths. These are *short*, which is 1 inch long (see fig. 4B), and *long*, which is 1⅝ inches long (see fig. 4C). Short needles are used mainly for maxillary injections on adults and any type of oral injection on children. Long needles are used mainly for mandibular injections on adults. The hub of the needle screws onto the adapter of the syringe. Needles are disposable. They are used on only one patient. Then they are destroyed.

Preparing for an Injection

The following items need to be assembled before the syringe can be loaded and an injection given.

1. *aspirating syringe*
2. *needle*—To select the correct needle, you will need to determine if the patient is an adult or child. You must also know if the area to be injected is on the maxillary or mandibular arch.
3. *carpule of solution*—To determine the correct anesthetic solution, you will need to refer to the patient's medical history to be sure there are no medical problems or complications. When in doubt about which solution to use, *ask your doctor.*
4. *topical anesthetic*
5. *cotton-tip applicator or cotton roll*—used to apply topical anesthetic
6. *2" by 2" gauze squares*—used to dry injection site and retract cheek and/or lip.

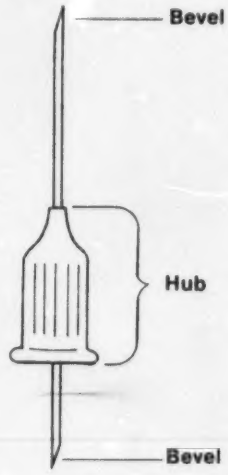


Figure 4B. Short Needle—1"

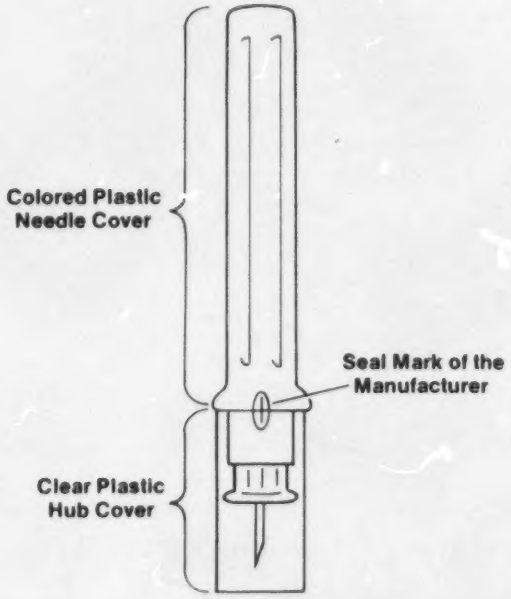


Figure 4A. Needle in Protective Covering As It Comes from the Manufacturer

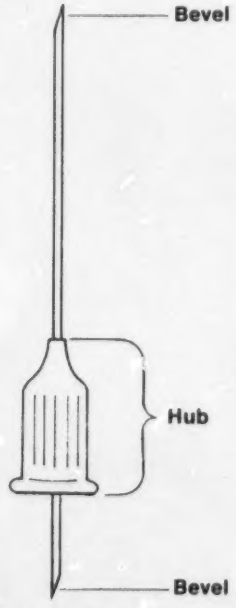


Figure 4C. Long Needle—1⅝"

Loading the Anesthetic Syringe

Now that you have assembled the proper materials, you are ready to load the syringe.

1. *Wash your hands.*

2. *Prepare the needle* (see fig. 5). You must break the sterilization seal between the plastic needle cover and the plastic hub cover. (If the seal was broken during shipment, dispose of it correctly and select another needle.) Hold the plastic covers between the thumb and index finger of each hand. Rotate the hub cover one direction and the needle cover, the other. You will hear a snap and the hub cover will come free. Dispose of the hub cover.

3. *Attach the needle* (see fig. 6). After making sure that the thumb ring is secure, hold the syringe in one hand and the needle (by the needle cover) in the other. Screw the needle hub onto the syringe adapter, applying a light pressure. Always keep the needle cover on when the syringe is not being used.

4. *Prepare the carpule.* Before inserting the carpule into the syringe, some doctors prefer having the carpule warmed. This process helps to relieve the stinging sensation created when cold solution is injected into warm tissues.

The carpule is warmed by one of three methods: storage in a carpule warmer de-

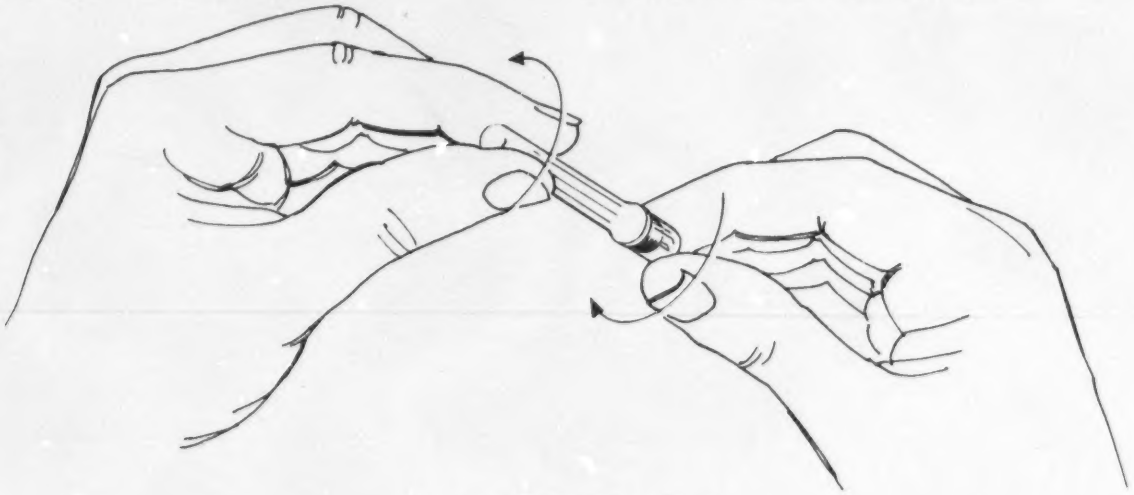


Figure 5. Prepare the Needle

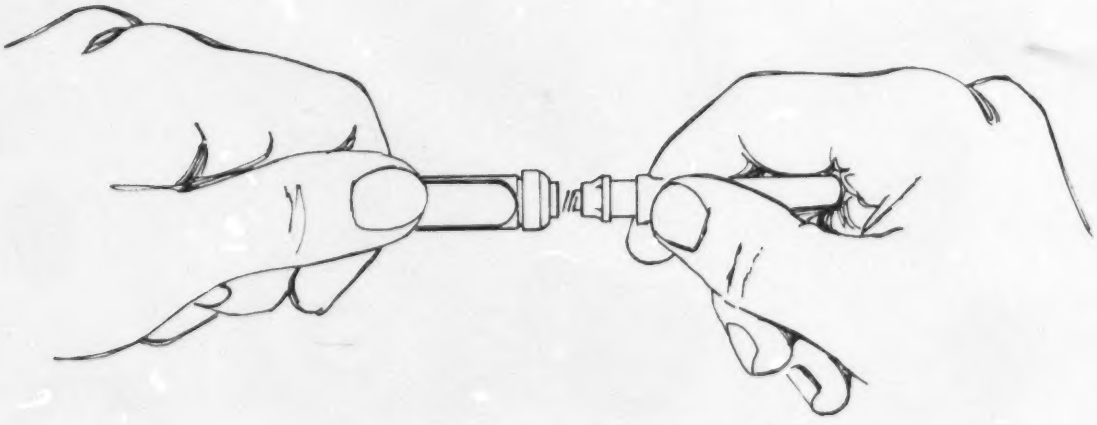


Figure 6. Attach the Needle to the Syringe

signed for this purpose; holding the carpule under warm, running water; or rubbing the carpule vigorously between your palms.

The cap and diaphragm end of the carpule then need to be wiped with 91 percent isopropyl alcohol or 70 percent ethyl alcohol. This is the carpule end that will come in contact with the needle. You want to make sure it is disinfected.

5. *Retract the piston* (see fig. 7). Hold the syringe in one hand. Retract the piston out of the barrel area to make room for the carpule. Retract the piston by pushing on the finger grip with your thumb. You will need to exert some pressure to do this.

6. *Insert the carpule* (see fig. 8). Once the piston has been retracted, place the carpule into the barrel of the syringe, *Plunger End First*. If you attempt to load it cap end first, you run the risk of breaking the carpule in your hand.

7. *Guide the carpule into the needle* (see fig. 9). While still retracting the piston, place your thumb and index finger around the open areas of the barrel. Gently guide the carpule into the needle. This allows the needle to penetrate the diaphragm of the carpule with a nice, straight puncture. If the puncture is made at a slant, the carpule will leak solution during the injection.

8. *Engage the harpoon* (see fig. 10). Hold the syringe barrel in one hand. Hit the thumb ring once with the palm of the other hand. One sharp blow should be enough.

9. *Test the syringe* (see fig. 11). After you have loaded the syringe, place your thumb in the thumb ring and your fingers on the finger grip. Remove the needle cover. By exerting pressure on the thumb ring, expel a few drops of solution to be sure that all is in working order. Replace the needle cover, and place the syringe on the tray until time for the injection.

Unloading the Syringe

This is done when the dental procedure is completed or if more carpules of anesthesia are needed during a procedure.

1. *Disengage the harpoon* (see fig. 12). Hold the syringe barrel in one hand, and with the other, make one quick pull on the thumb ring and piston. This will disengage the harpoon from the plunger in the carpule.

2. *Retract the piston.* Refer to figure 9 and the previous information in No. 5, under "Loading the Anesthetic Syringe."

3. *Remove the carpule* (see fig. 13A). While retracing the piston, place your thumb and index finger around the open

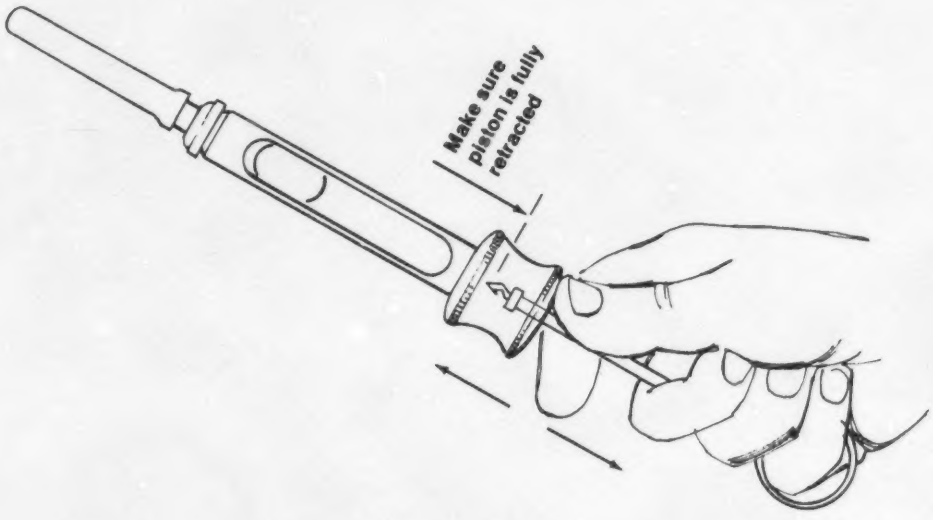


Figure 7. Retract the Piston

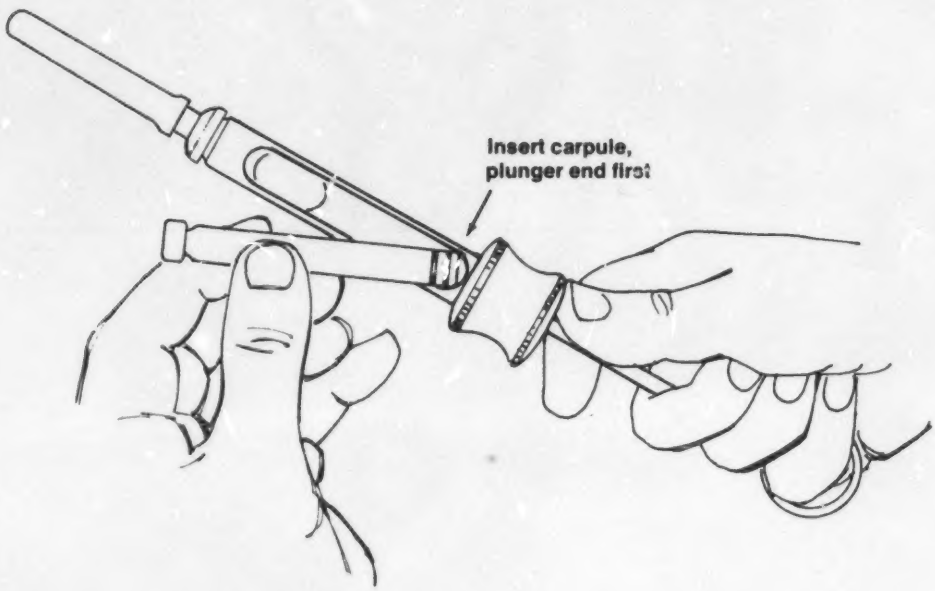


Figure 8. Insert the Carpule

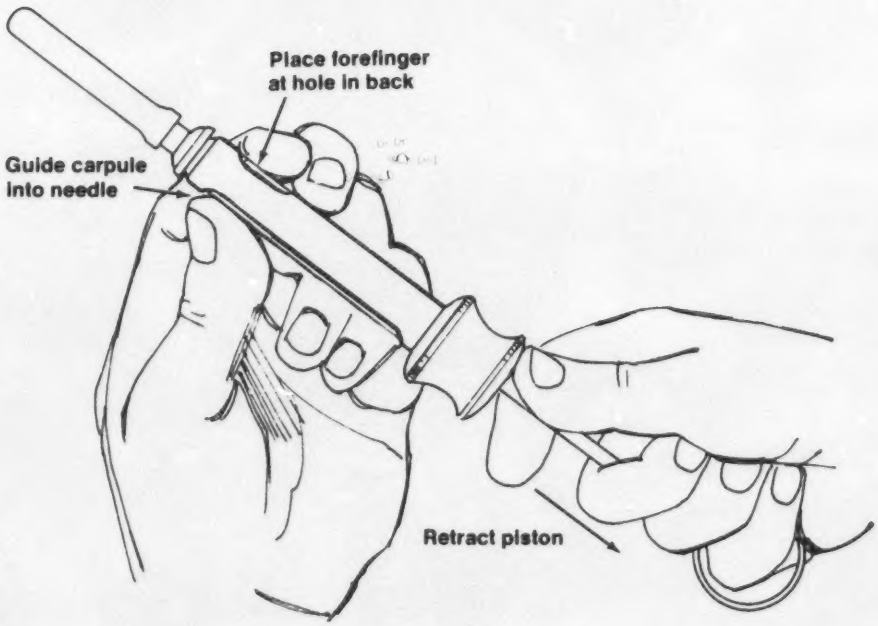


Figure 9. Guide Carpule into Needle

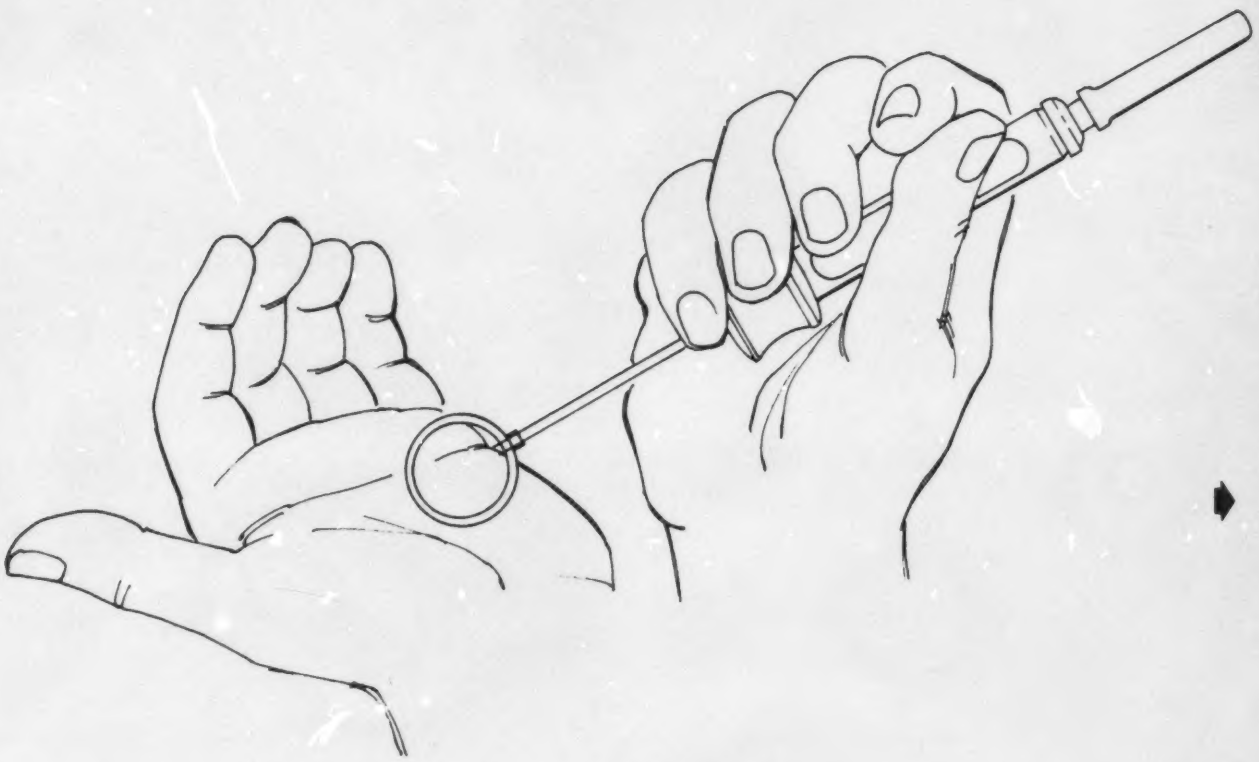


Figure 10. Engage the Harpoon

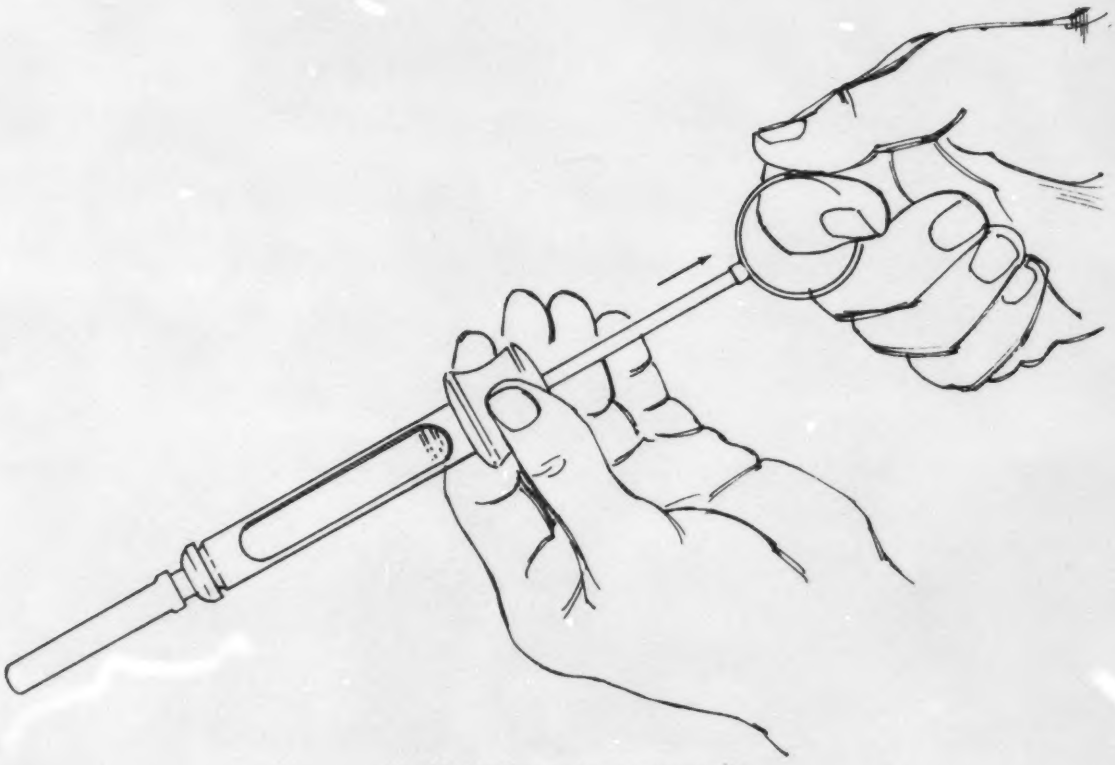


Figure 12. Disengage the Harpoon

Figure 11. Test the Syringe

areas of the barrel. Gently pull the carpule away from the needle. Turn the syringe so that the open side is down. The carpule will fall out.

If you must use more than one carpule during a procedure (see fig. 13B), this is the process you follow for removal. Then just repeat steps 6, 7, 8, and 9 of "Loading the Syringe."

4. *Remove the needle.* Needles are disposable. They are used on only one patient, and then they are destroyed. Needles may be destroyed by cutting them in a needle cutter or by bending.

Cutting the Needle

With the needle attached to the syringe, place it into the large hole (all the way to the hub) of the needle cutter. Then press the two levers together (see fig. 14A). This action cuts the needle, and it drops into the needle container. Replace the needle cover over the hub, and remove the hub from the syringe.

While holding the needle cover, place the remaining end of the needle into the small hole (all the way to the hub) and press the two levers together (see fig. 14B). This action cuts the needle, and it drops into the needle container.

The hub with the needle cover attached should then be placed in another container, not the trash. (Empty coffee cans are useful.) When the can becomes full, seal it with heavy tape. Then place it in the trash. When the needle cutter becomes full, dispose of its contents in the same manner.

Bending the Needle

While the needle is attached to the syringe, use the needle cover to bend the needle back and forth until it breaks at or near the hub (see fig. 15A). The broken needle will drop into the needle cover (see fig. 15B). Secure the needle cover to the hub and remove it.

Bend the remaining portion of the needle to a right angle on a hard, flat surface. Place the hub with needle cover attached in a container, not the trash. When the container becomes full, seal it with heavy tape. Then place it in the trash.

Patient Consideration

No patient looks forward to receiving an injection in the oral cavity. Therefore, as the dental assistant, it is your responsibility to relieve as much anxiety concerning this procedure as possible.

—Avoid leaving the syringe in view of the patient. If this is not possible, cover the syringe with a towel.

–Avoid passing the syringe to the doctor in the patient's line of vision. Pass it behind the head or directly under the chin.
–During the injection procedure, lightly rest your hand on the patient's shoulder or arm as a gesture of concern.
–Be your pleasant, understanding, professional self. The patient will appreciate it.

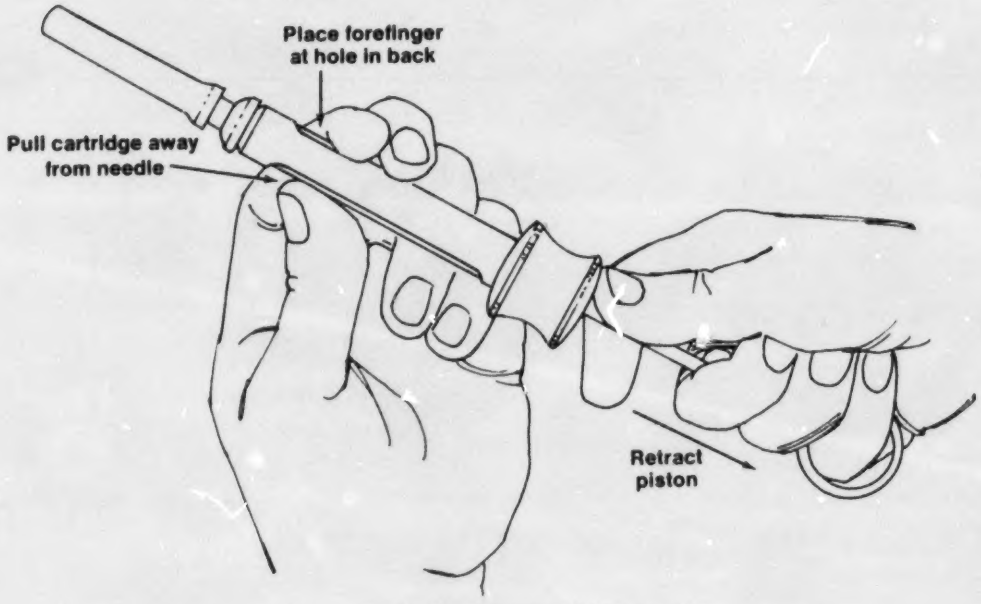


Figure 13A. Remove the Carpule

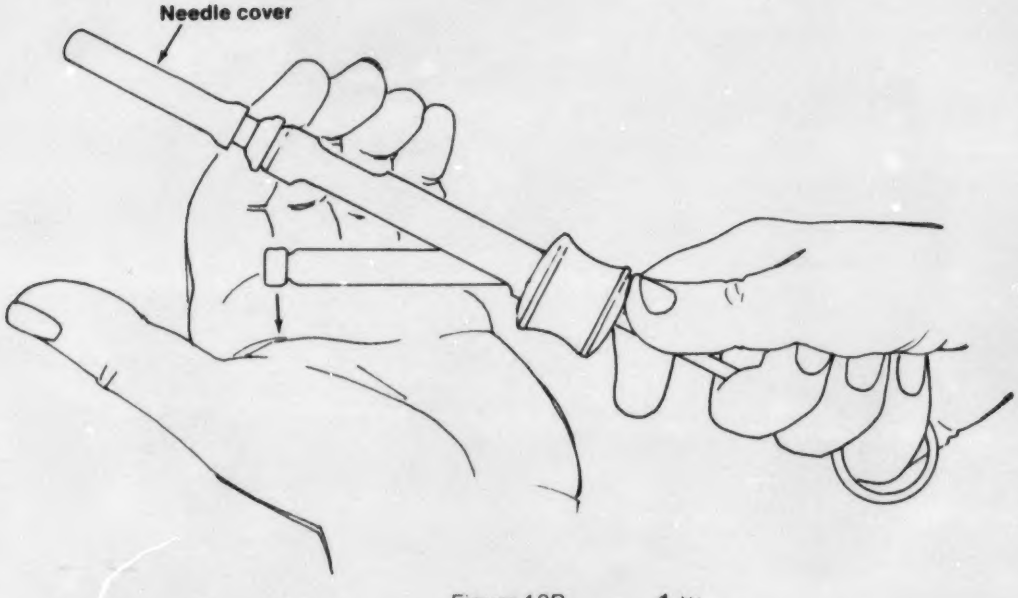


Figure 13B

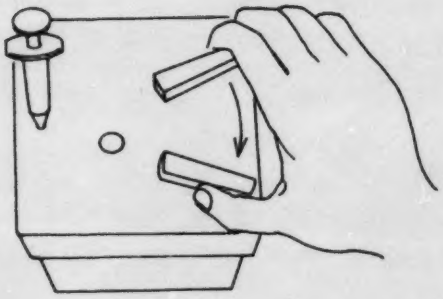


Figure 14A. Cut the Needle

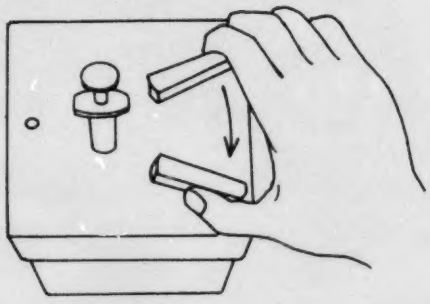


Figure 14B. Cut the Needle

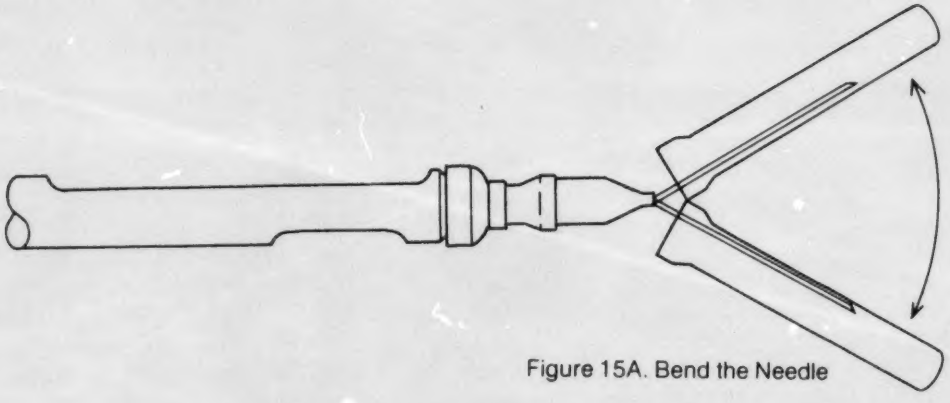


Figure 15A. Bend the Needle

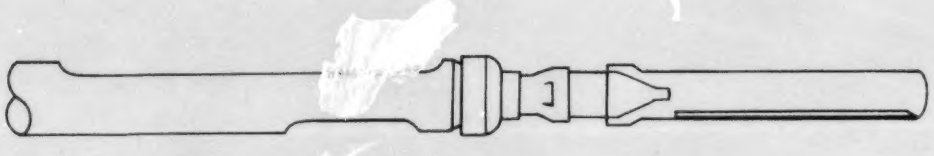


Figure 15B

Unit

TWO

Dental Office Emergencies

Objectives: *Upon completing this unit, you will be able to–*

1. *define syncope, describe the visual signs, and the first-aid measures;*
2. *define anaphylactic shock, describe the visual signs, and the first-aid measures;*
3. *define epileptic seizure, describe the visual signs, and the first-aid measures;*
4. *list the visual signs and first-aid measures for obstruction of the airway; and*
5. *define angina pectoris, describe the visual signs, and the first-aid measures.*

New Terms and Definitions:

1. *adverse reaction*–a reaction against or opposite of that which should occur.
2. *anaphylactic shock*–severe, allergic reaction by the patient's body to a foreign protein substance in the blood.
3. *angina*–a disease marked by spasmodic attacks of intense pain.
4. *angina pectoris*–intense or severe pain in the chest due to a *decrease* in the amount of oxygen being supplied to the heart.
5. *antiallergic*–drugs (such as benadryl or epinephrine) used to reverse the symptoms of an allergic reaction.
6. *aspirate*–the taking of a foreign object into the lungs while breathing.
7. *cardiac arrest*–a process by which the normal function and beating of the heart stops.
8. *convulsion*–tremors or jerking of the body due to stimulation of the central nervous system.
9. *epilepsy*–a disorder brought on by the disturbance or interruption of the electrical rhythms of the central nervous system.
10. *genetic*–those conditions or traits that are inherited from one's ancestors and/or parents.
11. *ingest*–to take into the stomach through the same process and channels as that of food.
12. *myocardial infarction*–blockage of a main artery to the heart *eliminating* the flow of blood and oxygen into the heart, causing portions of that muscle to die. Heart attack.
13. *pathogenic*–a disease or condition caused by a microorganism or substance.
14. *seizure*–a sudden attack.
15. *supine*–reclining position in which patient lies flat on the back with the face upward.
16. *syncope*–a temporary reduction in the supply of blood to the brain.
17. *tremor*–a trembling or shaking.

As you have learned from studying the core curriculum unit on first aid, life-threatening emergencies can occur any place at any time. One place where emergencies often occur is the dental office. Therefore, the dental team must be prepared to respond quickly and correctly to take care of minor emergencies. An example is *fainting*, before it becomes a major emergency, such as *cardiac arrest*.

Syncope

Syncope, or fainting, is the most common dental emergency. It can occur before, during, or after the dental treatment. Syncope is defined as a temporary reduction in the supply of blood to the brain due to the dilation of blood vessels in another part of the body, usually the stomach or legs.

Fear and apprehension are the greatest causes of syncope. Fear of the sights, sounds, and smells in the dental office, or apprehension of the treatment itself, can cause a patient to faint. It is important, then, that the assistant closely observe the patient's reactions to what is happening to him or her. Should an emergency situation occur, the dental assistant should constantly monitor the patient's vital signs. This unit discusses some of the most frequent dental office emergencies.

Visual Signs. The patient will become extremely pale. The skin will feel cold and damp to the touch. The eyes will begin to roam and will be unable to focus on any one object. The pupils may also dilate. When asked how he or she feels, the patient will complain of feeling dizzy, light-headed, and/or nauseated. There may also be a momentary loss of consciousness.

First-Aid Measures. All materials (cotton rolls, saliva ejectors, matrix bands, etc.) should be removed from the patient's mouth. The dental chair should be positioned so that the patient's feet are slightly higher than the head. (A patient who becomes faint in the reception area should place the head between the knees.) Loosen all tight-fitting clothing from around the waist and throat. Break a capsule of aromatic ammonia and pass it under the patient's nose. Do not hold it directly against the nose, since the fumes can burn sensitive nasal tissues.

Apply a cold compress to the forehead and one to the back of the neck. Administer oxygen if the patient appears to have trouble breathing. If vomiting occurs while in the dental chair, roll the patient onto his or her side and, if necessary, wipe out the mouth. Sometimes the patient may have trouble breathing. If this occurs, give the patient oxygen. Always reassure the patient that he or she will be all right. After the patient has recovered, raise the chair to the sitting position for a few minutes before allowing the patient to stand.

Anaphylactic Shock

Anaphylactic shock is defined as a severe allergic reaction by the body to a foreign protein substance in the blood. Anaphylactic shock can be caused by foods or insect bites. It can also be caused by medications. The medications used most often in the dental office are local anesthetic solutions.

Anaphylactic shock can happen to anyone. Patients are not always aware of all their allergies. Medications and local anesthetics that have been used for years without an allergic reaction can suddenly trigger an adverse reaction.

It is very important that the patient's reactions be observed during and immediately following a local anesthetic injection. Anaphylactic shock has a very rapid onset, with deadly consequences if left untreated.

Visual Signs. Within seconds or minutes of an injection, a patient may exhibit one or more of the following allergic reaction symptoms. These are rash and/or large welts on hands, feet, face, neck, and chest. Another sign is difficulty in breathing and swallowing due to extreme swelling of the throat tissues. The patient's sinuses may begin to either run or become congested. The eyes can begin to tear up and turn red. Tremors, convulsions, and cardiac arrest may also occur.

First-Aid Measures. All materials (cotton rolls, saliva ejectors, etc.) should be removed from the patient's mouth. While

the doctor is giving antiallergic and antihistamine drugs, the assistant should prepare the oxygen and loosen all tight clothing from around the waist and throat.

If conscious, the patient may be more comfortable in a nearly sitting position. If the patient begins to have convulsions, the chair should be placed in a reclining position. If possible, a padded tongue blade should be placed between the patient's teeth to prevent biting the tongue.

Sometimes during anaphylactic shock, the patient will go into cardiac arrest. Cardiac Pulmonary Resuscitation (CPR) should be administered and medical assistance requested.

Epileptic Seizure

An epileptic seizure is a disorder brought on by the disturbance or interruption of the electrical rhythms of the central nervous system. It is characterized by repeated involuntary convulsions. The cause of the electrical rhythm disturbance can be either genetic or pathogenic.

If a patient has epilepsy due to genetic factors, he or she will probably be able to feel or anticipate a seizure before it occurs and tell the dental team. Therefore, emergency preparations can be made.

If the seizure is caused by pathogenic factors, such as a local anesthetic solution, the onset will be rapid, with no warning.

Visual Signs. Seizures are classified as either grand mal or petit mal. A *grand mal seizure* is severe. The patient may experience loss of consciousness followed by violent muscle contractions, drooling from the mouth, and loss of breath. The grand mal seizure may last for several minutes. A *petit mal seizure* is similar to a brief faint. The seizure is of short duration, often characterized by the patient staring into space.

First-Aid Measures. The principal first-aid measure for an epileptic seizure is to prevent the patient from getting hurt. This does not mean you should physically restrain the patient. The patient's chair should be reclined and any tight clothing loosened.

If the patient had warning of the seizure, all materials and objects can be removed from the mouth. If no warning was given, do not attempt to remove these items once the seizure has begun. If possible, place a padded tongue blade between the teeth to prevent the patient from biting the tongue. Give oxygen, if necessary.

When the attack subsides, cover the patient with a blanket and allow him or her to sleep. Request medical assistance if the patient has no known history of epilepsy.

Obstruction of the Airway

The patient may accidentally ingest or inhale any of a number of foreign objects during dental procedures. You should take precautions to avoid this type of emergency.

Occasionally, a patient will aspirate an object into the lungs or ingest an object into the stomach without being aware of it. However, most patients are very much aware of what has happened. Their discomfort is immediate and very obvious.

Visual Signs. If an object has partially obstructed the airway, the patient will begin to cough and choke. If the object has totally obstructed the airway, the unconscious reaction of the patient is to place both hands on the throat. The patient may begin to turn blue and to lose consciousness.

First-Aid Measures. The patient should be elevated to a sitting position. If the object is partially obstructing the airway, giving the patient oxygen will help relieve some distress. This will allow the object to be removed, either by hand or by coughing or vomiting.

Should the object totally obstruct the airway, stomach or chest compression must be begun at once. If this is not successful, the patient will become unconscious and cardiac arrest will occur. At this stage, CPR must be given immediately. Medical assistance should be requested as soon as it is

realized that there is total obstruction of the airway.

Angina Pectoris

Angina pectoris is defined as intense or severe pain in the chest due to a decrease in the amount of oxygen supply to the heart. This condition may occur whenever a person is under emotional or physical stress, such as during a dental procedure.

Visual Signs. The patient will become pale, perspire profusely, have difficulty breathing, and complain of a sharp, intense pain in the chest.

First-Aid Measures. If patients have a history of angina, assist them in taking the medications they have with them. Place the patient in a semisitting position. Give oxygen, if necessary, and allow the patient to rest.

If the patient has no history of angina, on the doctor's advice, place a nitroglycerin tablet under the tongue and give oxygen. The patient should be placed in a semisitting position and allowed to rest until the pain subsides. The patient should be encouraged to consult a physician before returning for dental treatment.

The pain may not subside after the patient ingests the nitroglycerin tablet. If it continues and begins to radiate to the left arm or the left quadrant of the mandible, the patient may be having a *myocardial infarction* (heart attack). Continue giving oxygen and taking vital signs, watching closely for signs of cardiac arrest. Medical assistance should be requested immediately. CPR should be started, if necessary.

Unit

THREE

Oral Hygiene

Objectives: *After completing this unit, you will be able to–*

1. *define plaque and its symptoms that cause dental disease;*
2. *discuss and demonstrate selection of proper materials for oral hygiene;*
3. *demonstrate tooth brushing techniques; and*
4. *demonstrate tooth flossing techniques.*

New Terms and Definitions:

1. *gingivitis*–inflammation of the gingival (gum) tissues characterized by the typical signs and symptoms of inflammation: swelling, redness, pain, and increased heat.
2. *gingival sulci*–a space between the tooth and the free gingiva.
3. *interproximal areas*–space between the proximal surfaces of teeth.
4. *oral hygiene*–maintenance of cleanliness of the oral cavity, including the teeth and soft-tissue structures.
5. *periodontitis*–appears as a severe case of untreated gingivitis. However, it is differentiated by its severity, gum recession, presence of periodontal pockets, and loss of supporting bone.
6. *plaque*–deposit of material on the tooth surface that may serve as a medium for the growth of bacteria causing a carious lesion, or it may serve as a nucleus for the formation of dental calculus and the beginning of periodontal disease.
7. *pontic*–false tooth, usually the middle tooth or teeth of a dental bridge, spanning an area where teeth are missing.

Tooth decay affects over 95 percent of the population of the United States. The most common disease of the soft tissues of the mouth is inflammation of the gums *(gingivitis)*. When gingivitis is not treated, it can develop into advanced *periodontal disease (periodontitis* or *pyorrhea)*. These diseases often occur as a result of poor, ineffective oral hygiene.

Plaque has been determined to cause decay and periodontal disease. Dr. Charles C. Bass, a physician, proved that, with proper brushing and flossing, plaque could be removed by the patient. He also established that plaque takes approximately 24 hours to re-form. If plaque is completely removed at least once every 24 hours, *most individuals* can prevent decay and periodontal disease.

The object of oral hygiene is to prevent decay and periodontal disease that can lead to loss of teeth and even systemic health problems. A major role of the dental assistant is to explain and demonstrate to patients proper toothbrushing and flossing technique for oral hygiene home care. When the assistant provides this service, the time of the licensed office personnel can be used more productively.

Oral hygiene is a personal responsibility. There is no one *right* technique. Methods chosen must meet the individual needs of patients. No matter which technique is used, the goal remains the same. This is the complete and safe removal of all plaque.

One reason most patients have difficulty removing plaque is because it is not readily visible. *Disclosing agents* are probably the most frequentiy used temporary stains. These disclosing agents come in various forms, both in tablet and in solution. Several brands are available, and they can be purchased in drugstores.

Toothbrushes used to remove plaque vary in size, design, bristle hardness, length, and arrangement. The effectiveness of different types of brushes depends upon how they are used. Therefore, the choice of a toothbrush is a matter of individual preference. Choices should be based on the method of toothbrushing to be used, specific anatomic problems, and the individual's manipulative skill.

A worn brush can be as inefficient as no brush. So brushes should be replaced often.

Toothbrushing

Several techniques can be used for adequately brushing the teeth. Dr. Charles C. Bass designed a method of personal oral hygiene that has been modified over the years. It has been combined with others to fit patient needs.

The modified *Bass technique*, using a soft brush with round-ended bristles, is recommended. When the facial and lingual surfaces are brushed, the brush is placed against the junction of the tooth and the gingival tissue. It is placed at a 45-degree angle, away from the chewing surface of the tooth (see fig. 1).

Using firm pressure, a vibratory motion is started. The brush is rotated, so that the vibrating bristles move toward the occlusal surface of the teeth. This stroke should be repeated until the tooth surface is clean. By using a *disclosing wafer* after brushing, one can determine how many strokes are necessary.

With this technique, the ends of the brush bristles reach into the *gingival sulci* and *interproximal areas (see fig. 2). All the* facial and lingual surfaces of all the teeth are cleaned in this manner. The *occlusal*, or chewing, surfaces can be cleaned with forward and backward strokes. This permits the bristle ends to scrub these surfaces.

Establish a set pattern using this technique. This ensures that all tooth surfaces *are thoroughly cleaned (see fig. 3).*

Attention should be brought to one area of the mouth where plaque builds up quickly. Using the same method, brush the lingual (tongue) side of lower and upper teeth. The angle of the brush may have to be changed to suit the individual's anatomic structures. *(see figures 4 and 5).*

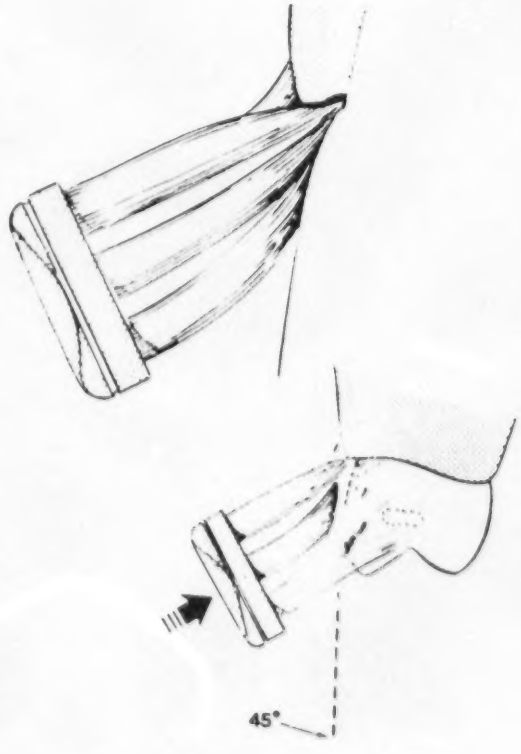


Figure 1. Correct Brushing Technique

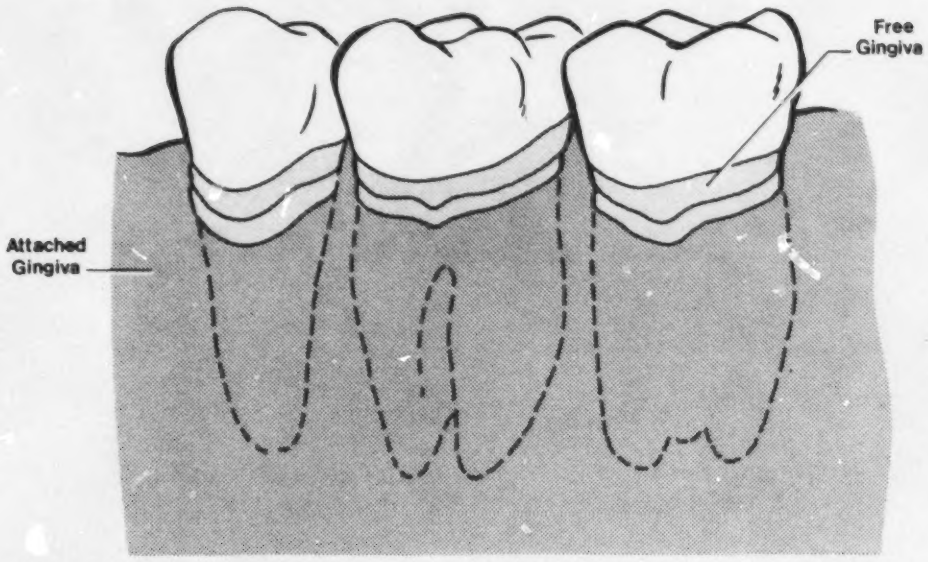


Figure 2. With the Modified Bass technique, brush bristles reach into gingival sulci and interproximal areas.

Flossing

Even the most efficient toothbrushing technique fail to remove all dental plaque from adjacent surfaces of teeth. It is physically impossible for the bristles to reach deep into these areas. For this reason, the use of unwaxed dental floss is recommended. This removes all dental plaque from the interproximal areas of the teeth.

The floss is passed gently between the teeth and underneath the edge of the gingival tissue. While being held tightly against the proximal surface, it is pulled slowly toward the occlusal surface of the tooth. Both sides of every tooth should be cleaned with dental floss in this manner. Cleanliness and removal of plaque can be detected by a squeaking sound, as the floss slides along the tooth surface.

The incorrect or careless use of dental floss may be harmful to the patient. Emphasize to patients that the floss should be placed carefully and not moved in a sawing fashion. The correct use is exacting and must be thoroughly taught to patients. Practice on yourself and on a friend.

The technique can be further simplified into steps (see fig. 6):

1. Warp the floss around the middle fingers.

2. Extend the index fingers over the floss, leaving one-half inch between them.

3. Beginning with the last molar, upper or lower, wrap this floss around it. Slide it toward the gumline. Then, with sufficient pressure, pull the floss toward the occlusal surface. Follow this procedure for all teeth. Remember to use pressure toward the surface being cleansed. Clean all surfaces.

Dental restorations sometimes pose a problem when flossing. Techniques can be revised to meet the flossing requirements. Figure 7 shows an example of one way to floss under a three-unit bridge.

The floss is threaded into a bridge cleaner and passed under the *pontic* (false tooth). These areas are good hiding places for food debris.

Crown and bridge patients are usually glad to know of this technique.

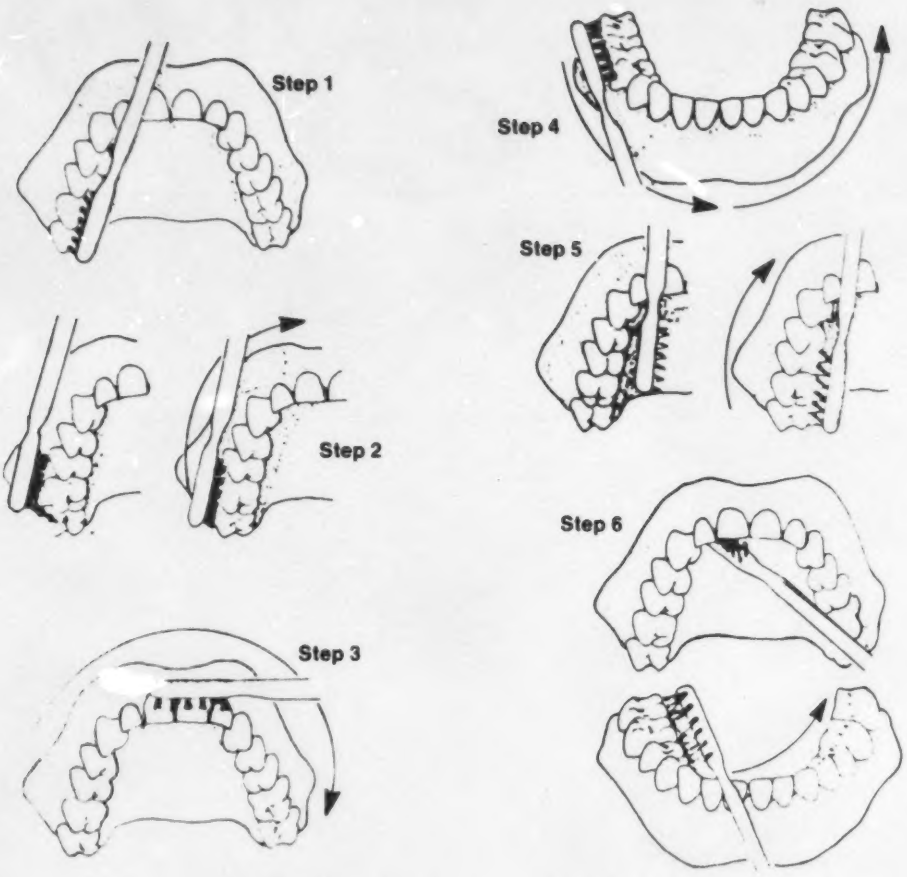


Figure 3. Brushing Pattern

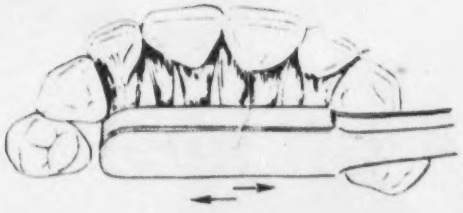


Figure 4

Figure 5

Different dental office practices may require an assistant to revise previously learned toothbrushing and flossing techniques. An effective professional assistant can smoothly alter any learned methods to fit the practice and the patients' needs.

Mouthwashes

Mouthwashes are usually pleasant tasting and make the mouth feel clean. But no evidence exists that rinsing with a mouthwash alone is enough to maintain good oral hygiene. The debris that causes bad breath must be removed. Mouthwashes serve only as a temporary cover-up.

Clinical studies have shown that rinsing with clear water and chewing gum do clear loose debris from the mouth. But these methods alone have not been proven effective for maintaining oral health.

Oral hygiene is maintained by keeping the mouth properly cleansed. Instruct the patient to:

1. Brush teeth immediately after eating, using a soft-bristled brush. Emphasize that it is not what goes on the brush that is important, but the amount of time and the way the brush is used.
2. Floss teeth once daily.
3. Have oral examinations as needed, and at least twice yearly.

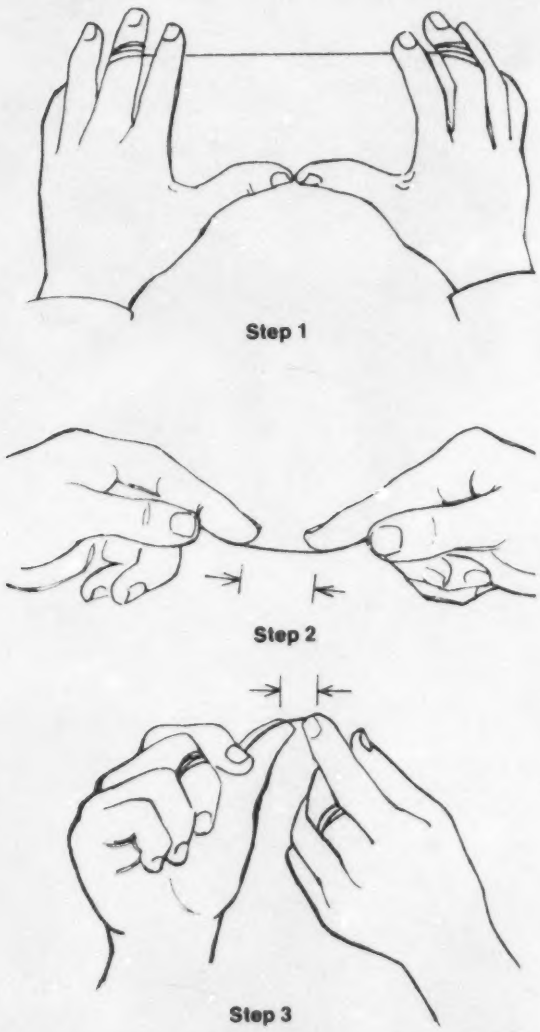


Figure 6. Finger Positions for Flossing

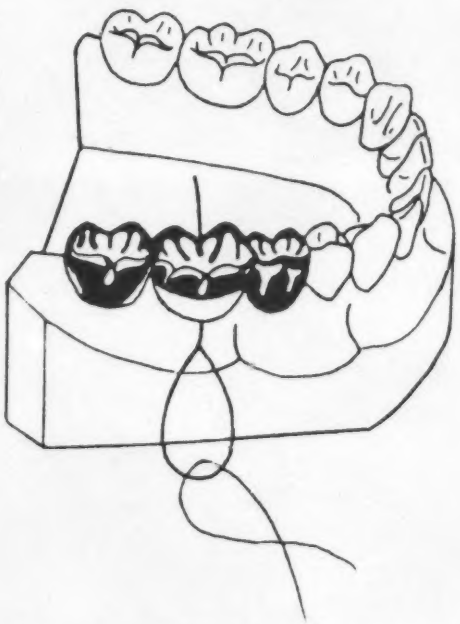


Figure 7. Flossing Under a Three-Unit Bridge

Objectives: *After completing this unit, you will be able to–*

1. *identify and describe the parts and the function of hand cutting instruments;*
2. *describe and identify the use of various instruments in dental practice;*
3. *tell the difference between double-ended and single-ended hand cutting instruments;*
4. *give the type, shape, and use of various dental burs;*
5. *select the correct dental bur according to the procedure indicated;*
6. *identify dental burs by their number range;*
7. *name the designers of dental hand instruments; and*
8. *discuss the proper care and maintenance for instruments and burs.*

Unit

FOUR

Instrumentation

New Terms and Definitions:

1. *bur*–similar to an industrial drill. It is used in a dental handpiece for cutting or refining.
2. *friction grip*–smooth-shafted bur that is held in the handpiece by friction.
3. *handpiece*–pen-shaped device to hold a bur. Held in the hand, the operator can control the speed of the bur.
4. *high speed*–100,000 to 800,000 rpm.
5. *latch type*–refers to the notch at the end of a bur that holds it in the same type of handpiece.
6. *prophylaxis*–a procedure for removing substances from the teeth. The purpose is to prevent dental disease.
7. *rpm*–revolutions per minute.
8. *slow speed*–6,000 to 10,000 rpm.
9. *sterilize*–to remove or destroy all microorganisms.
10. *torque*–the turning power of the handpiece and bur when pressure is applied during a cutting or polishing procedure.
11. *orthodontic bands*–preformed stainless steel rings that are fitted around the teeth and cemented in place.
12. *impression material*–material used to make an imprint of the jaw and teeth, usually for making diagnostic models.
13. *impression tray*–a carrier for the material used in making impressions of teeth and adjacent structures.
14. *dental cement*–an adhesive filling material used to hold inlays, crowns, bridges, and acrylic fillings in place. It is sometimes used as a temporary filling.
15. *irrigation*–washing the oral cavity with a stream of water.

A wide variety of instruments and supplies used in operative procedures is available. The list expands as new products and techniques are developed. The selection of instrumentation for a specific procedure is based on the dentist's personal preference. This may create problems for the beginning dental assistant in learning instruments.

Only a few of the more common hand instruments are represented in this unit. Specific instruments for each dental specialty will be dealt with in other units under the topic of the *procedure* or *dental specialty*.

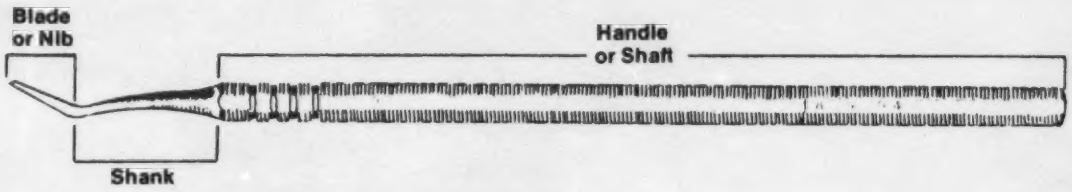


Figure 1. Parts of a Hand Cutting Instrument

Hand Cutting Instruments

The term *hand cutting* refers to instruments under hand direction and not to motor-driven instruments. The instruments' names relate to their use or shape. However, some carry the name of their designer, such as *Black, Eames, Hollenback, Tofflemire,* and *Wedelstaedt.*

Most dental hand instruments are made of *stainless steel* or a special alloy. This alloy has properties of hardness, strength, maintenance of a cutting edge, resistance to the action of acid, and a high melting point. *Stellite* and *Tarno* are two of the commercial names given to these metals. These names sometimes appear on the instrument. *Delrin* is used in some nonmetallic instruments.

Parts of a Hand Cutting Instrument

The components of dental hand instruments are the *handle* (or *shaft*), the *shank*, and the *nib* (or *blade*). The overall length of these instruments is about six inches (see fig. 1).

1. *Blade*—sharp edge of a cutting instrument.

2. *Nib*—working end of a condensing instrument. It may be smooth or serrated.

3. *Shank*—connects the shaft of the instrument with the blade or nib. It can be straight or bent at an angle. (The angle of the shank is designed so that a specific area of the mouth can be reached with a particular instrument. Some instruments are *contra-angled* in order to bring the blade as near as possible in a direct line with the shaft. This brings the working end of the instrument within 2 millimeters of the long axis of the handle.) See fig. 2.

Figure 2. Contra-Angle Instrument

4. *Handle (shaft)*—use of the instrument will dictate the weight and size of the handle.

Note: Instruments that come in left and right pairs often have the blade or nib placed on opposite ends of a single handle. These are known as *double-ended* instruments (see fig. 3).

Instrument Identification

Dr. G. V. Black presented a specific numbering system to provide complete identification of hand instruments. He uses the metric system and describes the handle, blade or nib, and the shank (see fig. 4).

- 1st number—describes the *width* of the blade in tenths of a millimeter.
- 2nd number—describes the *length* of the blade in millimeters.
- 3rd number—describes the *angle* of the blade with the long axis of the handle.

There are several different types of numbering systems, but they all serve the same purpose: *identification.*

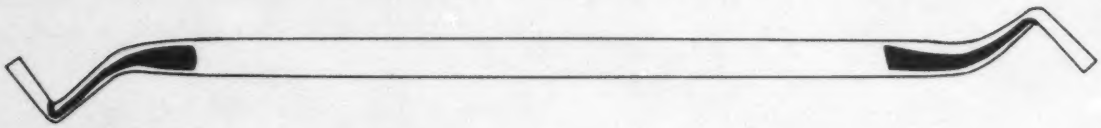


Figure 3. Double-Ended Instrument

Figure 4. Numbering System for Hand Instruments

Classification of Hand Cutting Instruments

The name of an instrument often depends on the function it was designed to perform.

Angle-former–similar to a hoe, with the cutting edge placed at a definite angle to the long axis of the instrument. It is used to accentuate "line and point angles" in the outline form of a cavity preparation.

Chisel–shaped like a carpenter's chisel. It is used to cut enamel along the lines of the enamel rods and to prepare the walls and margins of a cavity preparation. Chisels may only be used in a "push" motion. They may be straight or curved.

1. *straight*–straight shank
2. *binangle*–2 angles in the shank
3. *Wedelstaedt*–slight curve in the shank

Gingival Margin Trimmer–modified hatchet with slightly curved blade designed to scrape in a sideways motion. It is used to place bevels on the gingival margins of the cavity preparation.

Hatchet–shaped like a wooden hatchet. It is designed to cut enamel along the lines of the enamel rods. It's also used to prepare the walls and margins of a cavity preparation.

Hoe–similar to a garden hoe and must be used in a "pulling" motion. Hoes are used to smooth and finish the walls and floor of the cavity preparation.

Miscellaneous Operative Instruments

The *mouth mirror, cotton pliers,* and *explorer* are commonly known in the practice of dentistry as the "basic three."

There can be several different brands and styles of all three instruments. Different sizes are required because they are used with different sizes of teeth.

Mouth Mirror–a small plain or *magnifying* mirror used to *reflect* the operating field, to *retract* the tissue and tongue, and to *protect* tissue from injury during procedures.

Explorer (probe)–has a very sharp, fine point. It is used to examine the teeth and restorations. It is designed in both straight and curved forms.

Pliers (cotton pliers, pickups, forceps)–designed with plain or serrated points. They enable the operator to pick up,

hold, and place medicaments or cotton pellets to dry the tooth, and to remove sutures (stitches).

Spatula—various sizes and shapes, with flexible or stiff blades. It is used to mix materials on a pad, in a bowl, or in a dampened dish. It is made of steel, stellite steel, agate, plastic, and wood.

Burnisher—blade or nib with a smooth, beveled margin. The "beaver tail" is a common style used in several procedures. They come in several forms.

Cleoid—claw-shaped blade with a cutting edge entirely around the blade. It is used primarily as a carver.

Discoid—disk-shaped blade with a cutting edge. It is used as a carver. It is usually a double-ended instrument with a cleoid and discoid combination.

Spoon Excavator—small, bowl-like curve with the cutting edge entirely around the blade. It can be shaped into a tapered and sharpened blade. It is used to "scoop" out carious dentin, among other procedures. It comes in a variety of sizes and shapes.

Scissors—use of the instrument dictates the design. Scissors are used to sever tissue and trim dental materials, including contouring of orthodontic bands and crowns.

Syringe—designed to carry materials into a tooth or socket for irrigation or into a container, such as ejecting impression material into a preparation or an impression tray. Syringes are made in chrome-plated steel or in disposable plastic.

Plastic Instruments—named for the job they do, not the materials they are made of. They are used to move and pack various dental cements while they are still soft and easily changed in shape. They are usually double-ended and are not sharp (see figs. 5-9).

Care of Instruments

Careful use of instruments can prolong their life. Avoid dropping them or using them for procedures they are not designed to perform. For example, don't use an enamel hatchet to turn screws.

Always use the manufacturer's suggested procedures for cleaning and sterilizing instruments. Sometimes cutting edges are damaged by chemical solutions or overloading instruments on a sterilization tray.

Rotary Instruments—Handpieces

The dental handpiece is one of the most used instruments in the restoration of tooth structure. The handpiece, similar in design to a pen, is tapered at one end. It has an opening to hold a small rotary instrument called a *dental bur*. Burs are held in the handpiece and spun at various speeds to cut or polish tooth structure.

With this apparatus, the dentist guides the cutting and polishing action by hand. Thus it is called a handpiece. The bur and handpiece are similar to drills and bits used in industry. So many people refer to them together as the "drill."

Modern handpieces are powered by compressed air. The handpieces are activated by a foot control, much like an accelerator of an automobile. The more it is depressed, the faster the handpiece will operate. This foot control frees the dentist's hands so the handpiece can be controlled with ease and stability.

Two types of handpieces are used in dentistry. These are the *conventional-speed (slow-speed)* and the *ultra-speed (high-speed)* handpieces.

Conventional or Slow-Speed Handpiece

This handpiece can turn the bur at speeds of up to 25,000 rounds per minute (rpm). The original slow-speed handpiece was belt-driven by a small motor or gear. Some models of laboratory-style handpieces are still made this way to offer more torque and fine control. Chairside models are driven by the same compressed air that powers high-speed handpieces (see figs. 10 and 11).

Since the introduction of the high-speed handpiece, the slow-speed handpiece is used mainly to remove decay, for fine

Figure 5. Dental Explorer—Pigtail

Figure 6. Dental Explorer—Straight or Probe

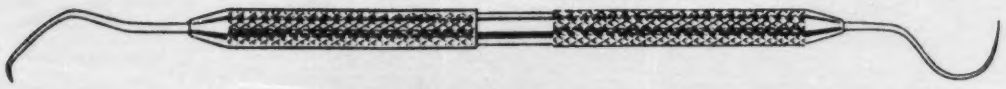
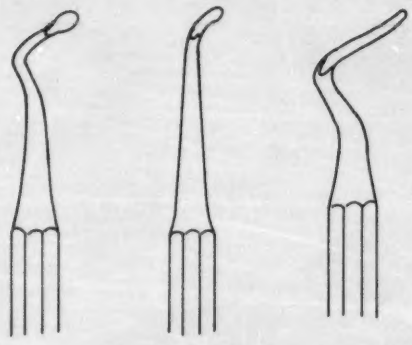
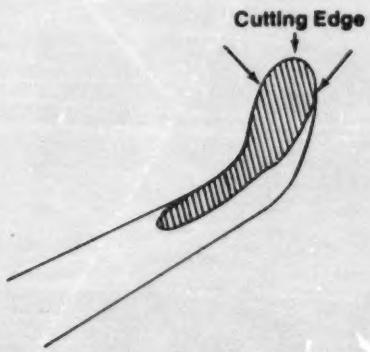


Figure 7. Dental Explorer—Sickle or Shepherd's Hook



Variety of Spoons



Blade of Spoon Excavator

(Note: can be double-ended)

Figure 8. Spoon Excavators

finishing on details of a restorative preparation, and for laboratory work. The slow-speed handpiece provides good control of the bur when properly used.

The basic slow-speed handpiece is referred to as the "straight" handpiece because of its design. Special attachments for the straight handpiece can expand its use. The two most common are the contra-angle and the prophylaxis angle.

The *contra-angle* holds a variety of short-shafted burs, grinding stones, and polishing disks. The name results from a slight bend in this attachment. Ultra-speed handpieces can also be referred to as contra-angled.

The *prophylaxis angle* (prophy-angle) is also a standard attachment for the slow-speed handpiece. It holds polishing cups, disks, and brushes that the dental hygienist uses to remove plaque and teeth stains.

There are two types of prophy angles, a screw type and a snap-on style. It is most important to state which type of prophy angle is being used when placing an order for polishing cups and so forth (see fig. 12).

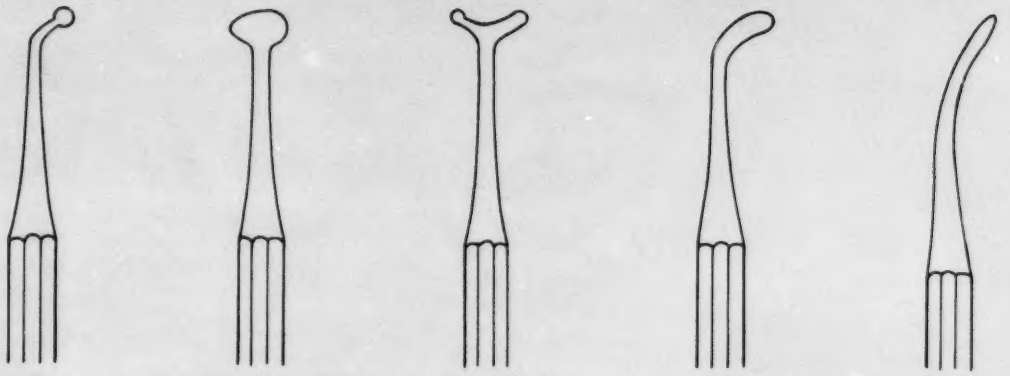


Figure 9. Burnishers

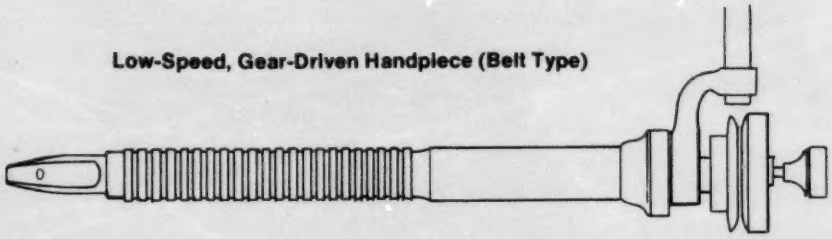


Figure 10. Handpiece (straight)

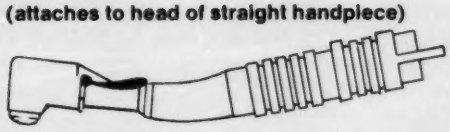


Figure 11. Contra-Angle Latch-Type Handpiece

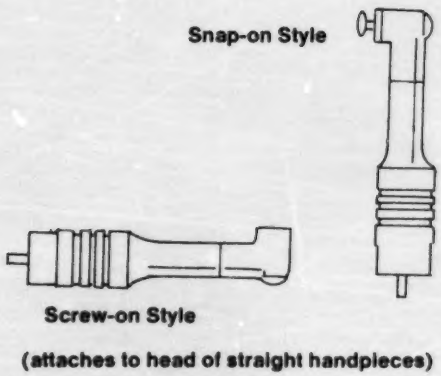


Figure 12. Prophylaxis Angle

Ultra-Speed or High-Speed Handpiece

The *ultra-speed handpiece* is used to do most of the bulk cutting on teeth. It does this very rapidly and with great accuracy (100,000 to 800,000 rpm). When the handpiece is powering a bur at 600,000 rounds per minute, it does not stop immediately when the pressure on the foot control is relieved. A high-speed handpiece can be used for many other purposes than just rapid removal of tooth structure (see fig. 13).

The friction of a high-speed bur on a tooth causes heat. High-speed handpieces supply a fine water spray to cool the tooth and wash tooth debris from the bur.

The scope of a dental assistant's job changed with the introduction of the high-speed water-spray handpiece in the 1940s. *Oral evacuation* (removing mouth debris) became a major task of the assistant. This is because the dentist's vision, while operating, is critical.

Maintenance of Handpieces

Between patients, the surfaces of handpieces should be cleaned and wiped with disinfectant. Modern handpieces can even be autoclaved (sterilized).

Daily maintenance can lengthen the life of a handpiece. Follow the manufacturer's recommended procedures for maintenance. Handpieces are expensive and, with proper care, can continue to function for a long time.

Dental Burs

The small cutting instrument held by a handpiece is called the *dental bur*. It is either made of *steel* or *carbide steel*. Regular steel burs operate at speeds of up to 10,000 rpm. Carbide burs operate at speeds of up to 800,000 rpm.

Some manufacturers mark carbide burs with a colored area, usually brown, on the shank. Learn to identify different brands of carbide burs used by your doctor to prevent confusion of steel and carbide burs.

Similar in design to carbide burs, diamond burs are manufacturerd by an electroplating process. Metal surfaces, filled with bits of industrial diamonds, are attached to the shank or disk. The number and size designation for a diamond bur may differ from the same sized steel bur.

Burs create heat when cutting tooth structures. Manufacturers suggest using a fine water spray to cool the tooth and reduce the amount of debris. The spray provides a field of vision for the operator during cutting and polishing procedures.

Burs are designed to revolve evenly and smoothly. Using cutting edges, or abrasive materials pressed into a shaped base, they perform the function of reducing tooth structure or restorative materials. Their basic design structure is shown in fig. 14.

Basic Design of Bur Shanks

1. *Latch or Notch*

Some handpieces are structured to be manually tightened around the shank of a bur. Handpieces with a *latched-type* open-

Figure 13. High-Speed Contra-Angle Handpiece

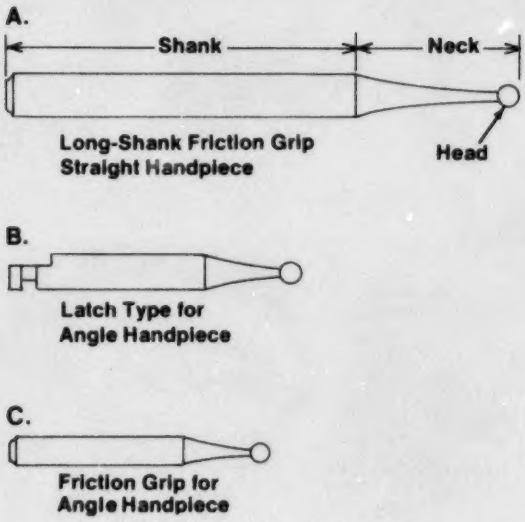


Figure 14. Basic Design of Burs

ing are designed to receive a *notched* bur. The latch is fastened into the bur notch. (Note: use with low-speed handpieces).

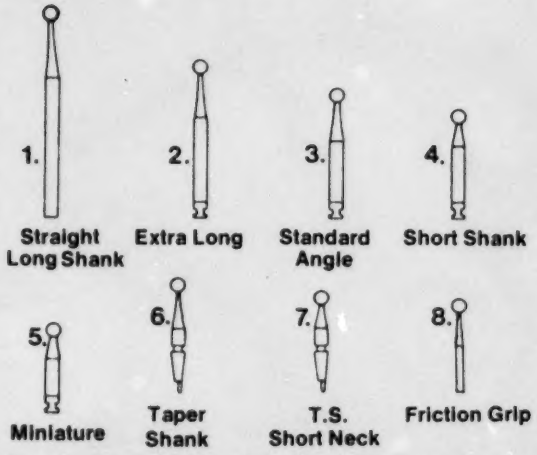
2. *Friction Grip*
Other dental burs have shanks designed to the correct diameter to fit into a handpiece by *friction*. The handpiece has a plastic or metal *chuck* constructed to fit the correct friction-type bur. (Note: use with high-speed handpieces).

3. *Long Shank*
Elongated in design, the *long shank* is used chiefly in the low-speed handpiece for *prosthodontics*, laboratory work, or surgical procedures. (They can be used in either high-speed or slow-speed handpieces.) See fig. 15.

When you know the basic bur head shapes, you can apply them to any type of steel, carbide, or diamond bur (see fig. 16).

The head *shape* of a bur gives it a name. For example, the round shape is called the *round bur*. Dentists use certain basic shapes of steel and carbide burs (see fig. 17).

The *size* and *shape* of the bur head is shown by numbers. Burs usually are manufactured in a series of graduated sizes. If you know the number, you can tell both the bur's size and shape.



Bur shanks come in various lengths and shapes.
1. ***Straight*—straight handpiece only.**
2. ***Extra long*—straight or contra-angle handpiece.**
3. ***Standard angle*—straight or contra-angle handpiece.**
4. ***Short shank*—straight latch, contra-angle handpiece.**
5. ***Miniature*—latch-type, miniature contra-angle handpiece.**
6. ***Taper shank*—latch-type, contra-angle handpiece.**
7. ***T.S. short neck*—latch-type, contra-angle handpiece.**
8. ***Friction grip*—air turbine handpiece only.**

Figure 15. Examples of Bur Shanks

Learning these can help you become a more effective assistant. The dentist can rely on you to prepare complete instrumentation for tray setups or to order replacement burs (see fig. 18).

The dentist or dental technician will also use other types of burs than just the basic ones used in restoration.

Again, by knowing the basic shapes of burs, you can apply them to other situations. Some examples of burs used in dental practice are shown in fig. 19.

Care of Burs

Proper maintenance of burs can prolong their cutting edges. Sterilization is also important to prevent the spread of disease.

Steel and carbide burs may be cleaned by scrubbing with soap, water, and a brush. Scratch brushes can also be used on hard-to-remove materials.

Carbide burs should be sterilized according to the manufacturer's recommendations. Steel burs can be placed in the *autoclave* (sterilizing equipment).

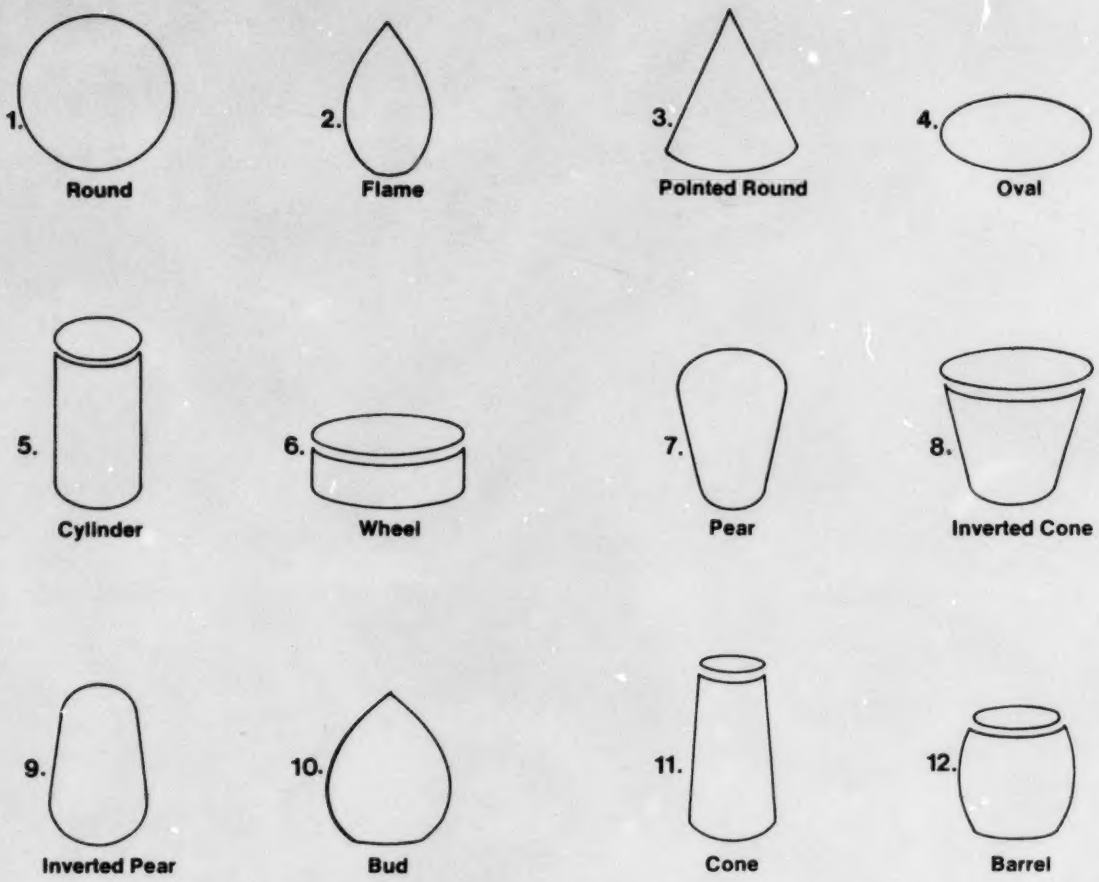


Figure 16. Basic Shape—Head of a Bur

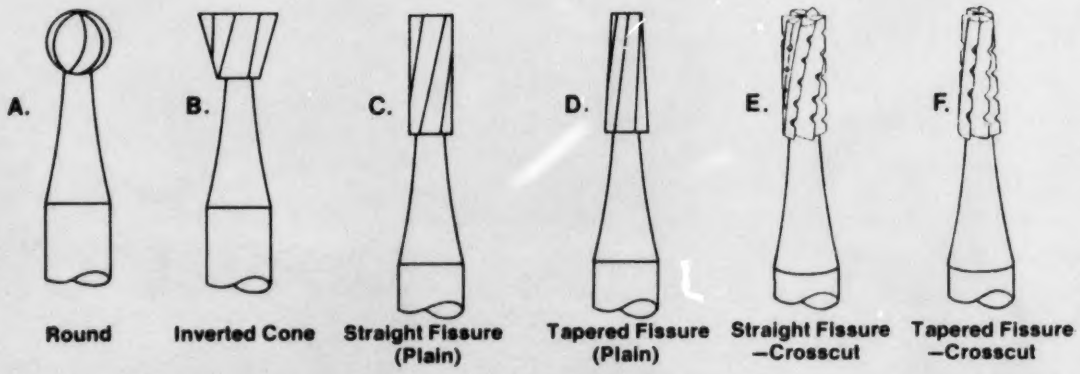


Figure 17. Basic Shapes of Carbide and Steel Burs

Standard Procedures for Sterilization and Disinfection of Dental Burs:

1. Thoroughly clean with a bur brush (avoid using scratch metal bur brushes on diamond burs).
2. Scrub and clean with soap and water.
3. Place in *ultrasonic cleaner* for several minutes to ensure total cleansing. (In an ultrasonic cleaner, sound waves vibrate in solution to loosen debris from soiled instruments.)
4. Rinse and remove excess water.
5. Sterilization–
   a. Steel burs can be sterilized in cold sterilization solutions or in the autoclave at 250°F for 15 minutes.
   b. Carbide burs should be sterilized according to the manufacturer's recommendations.
6. Disinfection–not less than 20 minutes in solution.

Dental Hand Instruments Study Cards

These cards represent only some of the more common dental instruments. They are designed as cards so that pictures of additional or new instruments can be added as they are introduced to you.

These cards can be used to practice identifying instruments individually. Or, if you set up a simulated tray, instruments can be identified by procedure. It is suggested that these cards be laminated to lengthen their use. The cards can also be made into transparencies.

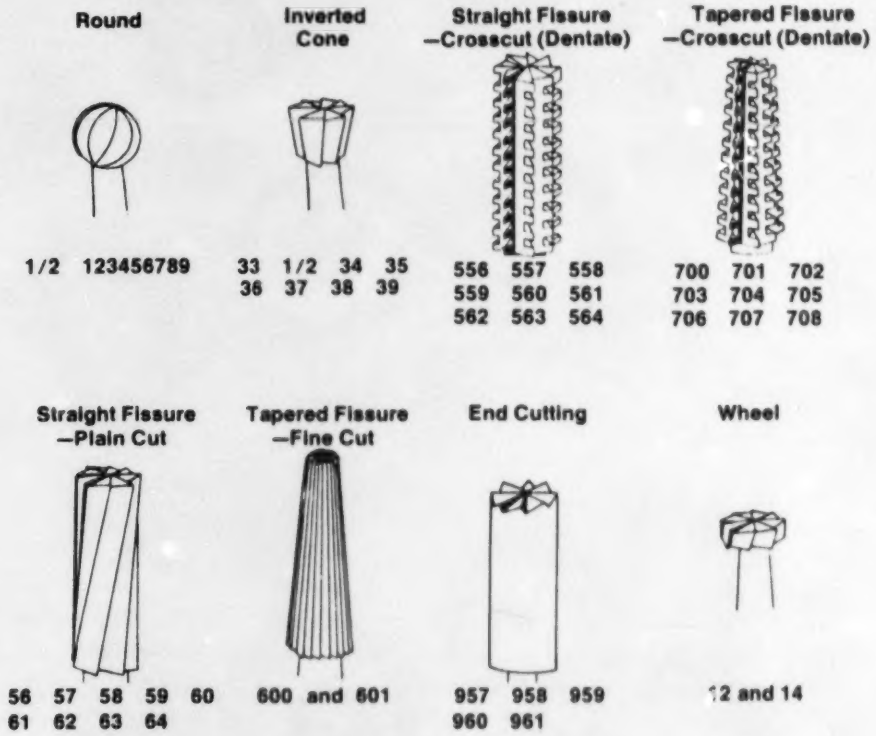


Figure 18. Basic Burs for Restorative Dentistry Numbering Guide

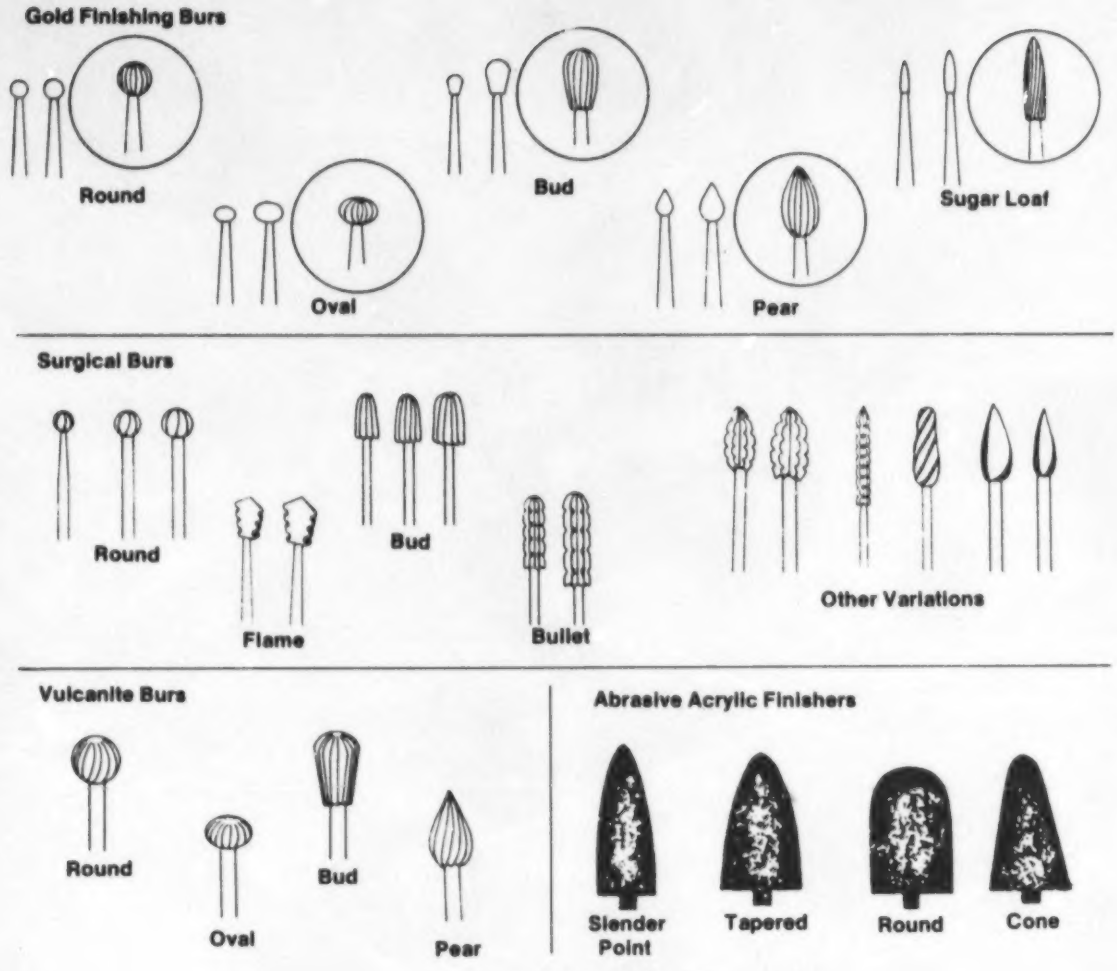


Figure 19. Types of Burs

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